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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,002	03/29/2001	Jianqin Wang	NEC F-10850	8523
27667	7590	11/30/2004	EXAMINER	
HAYES, SOLOWAY P.C. 130 W. CUSHING STREET TUCSON, AZ 85701			NGUYEN, DUC M	
			ART UNIT	PAPER NUMBER
			2685	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/821,002

Applicant(s)

WANG, JIANQIN

Examiner

Duc M. Nguyen

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This action is in response to applicant's response filed on 6/23/04. Claims 1-12 are now pending in the present application. **This action is made final.**

Claim Objections

1. Claims **10-11** are objected to because of the following informalities:
 - insert a coma “,” following “mixer” and then insert “each” after the coma in line 3 of both claims.

Here, since the claims recites “a first and a second Gilbert cell mixer” and that the components as recited in the claims correspond to **only one** Gilbert cell mixer (see Fig. 2). Therefore, it is suggested that the claim be amended in accordance with the above suggestion. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims **1-12** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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As to claim 1, 9-12, the claims recite a "signal distributor", this limitation was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Examiner's Note : Based on applicant's argument with respect to claim 9 in that Applicant argues that Gramham teaches a signal supplied from a local oscillator that is shifted by plus or minus 45 degree. Gramham, however, fails to teach a signal distributor that receives two local signals with different phases (see Applicant's response on page 12). However, it is noted that the specification never disclose a "signal distributor" except for "local input terminals 5 for inputting local signals LO and LOX having a phase difference" in lines 6-16 of page 6. Since the specification fails to further disclose a component that produces these above LO and LOX signals, it is assumed that these LO and LOX signals are just simply obtained from a LO signal with phase shifters in a similar way as in Gramham's reference. Since "input terminals" and "signal distributor" is not the same, in order to overcome the above 112 rejection, it is suggested that the claims be amended in accordance with the specification by using the "local input terminals" term rather than using the "signal distributor" term as recited in the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claim **9** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bojer** (US 6,029,059).

Regarding claim **9**, **Bojer** discloses an image rejection mixer (see Figs. 1-3, and col. 3, lines 5-57), comprising:

- A signal distributor with local signals as claimed (see Fig. 2, ref. 42 and col. 3, lines 21-45). Here, since the signals supplied to the mixers comprises local signals of different phases, the phase shifter 42 would read on the "signal distributor" as claimed;
- first and second mixing means as claimed (see Fig. 2, refs. 44, 46);
- first and second phase shift means (see Fig. 2, refs. 50, 52, and col. 3, lines 45-52);
- addition means as claimed (see Fig. 2, ref. 54);
- remove image signal as claimed (see col. 3, lines 45-49).

Here, although **Bojer** does not specifically mention the 90 degree phase shift of the IF signals for removing image signals, **Bojer** mentions that the signals are phase shifted and recombined to reject an image signal. Since using a 90 degree phase shift for removing image signals is known in the art, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify **Bojer** for providing a 90 degree phase shift as claimed, in order to remove a desired image frequency signal.

4. Claims **1, 3-5, 12** are rejected under 35 U.S.C. 103(a) as being unpatentable

over **Bojer** in view of **Law** (US 5,303,417).

Regarding claim **1**, it is rejected for the same reason as set forth in claim 9 above. In addition, although Bojer fails to disclose the phase shifters comprises R-L elements, it is noted that a phase shift circuit which comprises any combination of R, L, C elements is well known in the art as disclosed by **Law** (see Fig. 10 and col. 4, lines 15-18). Therefore, it would have been obvious to one skill in the art to incorporate Law's teaching to Bojer for providing a phase shift circuit comprising L-R components as claimed, in order to generate a desired phase shift for the signal.

Regarding claims **3-4**, they are rejected for the same reason as set forth in claim 1 above. In addition, since Law further discloses a feedback loop to control the phase shift circuit error (see Fig. 11 and col. 4, lines 19-29), it would have been obvious to one of ordinary skill in the art to further incorporate Law's teaching to Bojer for providing a feedback loop as claimed, for correcting errors of the phase shift circuit.

Regarding claim **5**, it is rejected for the same reason as set forth in claim 1 above. In addition, since using a differential amplifier as the addition means or summing circuit is well known in the art, it would have been obvious to one of ordinary skill in the art to further modify Law and Bojer for providing a differential amplifier as claimed, for providing IC (integrated circuit) capability for the mixer.

Regarding claim **12**, the claim is interpreted and rejected for the same reason as set forth in claim 1 above.

5. Claims **6-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Bojer in view of **Law** and further in view of **Staudinger** (US 5,339,462).

Regarding claim 6, **Bojer** as modified would disclose all the claimed limitations, see claim 1 above, except for impedances. However, Staudinger discloses matching circuits (impedance matchings) between the mixers and phase shift circuits (see Fig. 3, refs. 220, 224, col. 7, line 61-col. 8, line 2). Therefore, it would have been obvious to one skilled in the art to further incorporate Staudinger's teaching to Bojer and Law for providing impedance matching circuits as claimed (i.e, when the impedance of the mixers and phase shifts are different from each other), for stability purpose (prevent oscillations due to impedance mismatch).

Regarding claim 7, it is rejected for the same reason as set forth in claim 1 above. In addition, Staudinger discloses the impedance comprises a resistor, an inductor or a capacitor as claimed (see Fig. 7B).

Regarding claim 8, it is rejected for the same reason as set forth in claim 1 above. In addition, it would have been obvious to one skill in the art that the values of impedance in matching circuits 220, 224 in Staudinger are determined based on impedance mismatch between the mixers and phase shifts. Since the impedance is a complex number which includes an amplitude and a phase angle, thereby these values should also be determined based on their phase different as well. Therefore, the claimed limitations are made obvious by Graham and Staudinger for determining impedance values as claimed, in order to calibrate or compensate for phase errors.

Response to Arguments

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6. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mole et al (US Pat No. 6,226,509), Image reject mixer, circuit, and method for image rejection.

Sokoler (US Pat No. 6,073,001), Down conversion mixer.

.Fujii et al (US 5,708,399), Modulation and frequency multiplier for use therein.

9. Any response to this final action should be mailed to:

Box A.F.

Commissioner of Patent and Trademarks

Washington, D.C. 20231

or faxed to:

703-872-9314 (for formal communications intended for entry)

(for informal or draft communications, please label PROPOSED or DRAFT)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc M. Nguyen whose telephone number is 703-306-4531. The examiner can normally be reached on Monday-Thursday (9:30 AM – 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 703-305-4385.

Duc M. Nguyen
Nov 20, 2004

